REMARKS

The present application was filed on November 13, 2001 with claims 1 through 10. Claims 1 through 10 are presently pending in the above-identified patent application. Claim 5 is cancelled herein, without prejudice.

In the Office Action, the Examiner objected to the length and indicated insufficiencies of the Abstract, rejected the specification under 35 U.S.C. §112, first paragraph, as not being "full, clear, concise, and exact terms," and objected to the title as not being descriptive. The Examiner also rejected claim 5 under 35 U.S.C. §112, first paragraph, and rejected claims 9 and 10 under 35 U.S.C. §112, second paragraph, due to the terminology. The Examiner rejected claims 1 and 2 under 35 U.S.C. §102(e) as being anticipated by Popovic (United States Patent Number 6,804,307) and rejected claims 6-8 under 35 U.S.C. §103(a) as being unpatentable over Popovic. The Examiner indicated that claims 3 and 4 would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims.

The specification has been amended to correct typographical errors.

Formal Objections

The Examiner objected to the length and indicated insufficiencies of the Abstract and objected to the title as not being descriptive. The Abstract and title have been amended to address the Examiner's concerns and Applicant respectfully requests that the objections be withdrawn.

Section 112 Rejections

The specification was rejected under 35 U.S.C. §112, first paragraph, as not being "full, clear, concise, and exact terms." The Examiner also rejected claim 5 under 35 U.S.C. §112, first paragraph, and rejected claims 9 and 10 under 35 U.S.C. §112, second paragraph, due to the terminology. Regarding the specification, the Examiner asserts the specification is replete with terms which are not clear, concise and exact terms. Regarding claim 5, the Examiner asserts that the term "o" in the equation y=x+j/oL is not defined in the claim or specification and that the meaning is unclear. Regarding claims 9 and 10, the Examiner asserts that the term

"substantial" is a relative term which renders the claim indefinite.

The specification has been amended to address the Examiner's concerns. Applicant also notes that the term "substantial" is a well accepted term in claim drafting and that, in light of the present specification, a person of ordinary skill in the art would understand the meaning of the cited term.

Claim 5 has been cancelled herein, without prejudice.

Thus, Applicant respectfully requests that the section 112 rejections be withdrawn.

Independent Claim 1

Independent claim 1 was rejected under 35 U.S.C. §102(e) as being anticipated by Popovic. Regarding claim 1, the Examiner asserts that Popovic discloses a training generator (FIG. 3B: element 390) that generates a training code to be sent to the reception means enabling the reception means to match a received signal to a corresponding transmitted signal, wherein the training generator is capable of generating a training code with at least nearly ideal cyclic auto-correlation properties such that its cyclic auto-correlation function is at least nearly zero for all cyclic shifts (col. 5, lines 1-2), in that the transmission means are capable of concurrently sending said training code in a mutually shifted manner (col. 3, lines 50-56).

Applicant notes that Popovic teaches few details regarding *encoder 390*. In the text cited by the Examiner, Popovic teaches that

> a modulatable orthogonal sequence may be modulated by a shorter string of arbitrary, constant-envelope symbols and still *maintain a relation to an ideal periodic autocorrelation function*, which is equal to zero for all non-zero time shifts.
> (Col. 4, line 66, to col. 5, line 3; emphasis added.)

Popovic also teaches that

> each column and row corresponds to *n cyclic shifts of a modulatable orthogonal sequence* g_m, where m is a number of information symbols. The m information symbols may further be coded into n codewords corresponding to n columns of the matrix G_n. Different ones of the n codewords simultaneously transmitted on corresponding ones of the n transmit antennae. It

> should be noted that the n codewords may also correspond to the n rows of the matrix G_n.
>
> (Col. 3, lines 51-59; emphasis added.)

Applicant could find no disclosure or suggestion by Popovic that encoder 390 is a training generator, could find no disclosure or suggestion by Popovic of generating a training code with at least nearly ideal cyclic auto-correlation properties such that its cyclic auto-correlation function is at least nearly zero for all cyclic shifts, and could find no disclosure or suggestion by Popovic that the transmission means are capable of concurrently sending said training code in a mutually shifted manner. Independent claim 1 requires a training generator that generates a training code to be sent to the reception means enabling the reception means to match a received signal to a corresponding transmitted signal, wherein the training generator is capable of generating a training code with at least nearly ideal cyclic auto-correlation properties such that its cyclic auto-correlation function is at least nearly zero for all cyclic shifts, in that the transmission means are capable of concurrently sending said training code in a mutually shifted manner.

Thus, Popovic does not disclose or suggest a training generator that generates a training code to be sent to the reception means enabling the reception means to match a received signal to a corresponding transmitted signal, wherein the training generator is capable of generating a training code with at least nearly ideal cyclic auto-correlation properties such that its cyclic auto-correlation function is at least nearly zero for all cyclic shifts, in that the transmission means are capable of concurrently sending said training code in a mutually shifted manner, as required by independent claim 1.

<u>New Claims 11 and 12</u>

New claims 11 and 12 have been added to more particularly point out and distinctly claim various features of the invention, consistent with the scope of the originally filed specification, in order to give applicant the protection to which he is entitled. No new matter is introduced. Support for this material is set forth at page 8, line 8, to page 11, line 17, of the originally filed specification. The Examiner has previously considered the subject matter presented in new claims 11 and 12 when rejecting, for example, claim 1. More specifically, claims 11 and 12 recite the steps of generating a training code with at least nearly ideal cyclic

auto-correlation properties such that its cyclic auto-correlation function is at least nearly zero for all cyclic shifts; and transmitting said training code.

As noted above, Applicant could find no disclosure or suggestion by Popovic that encoder 390 is a training generator, and could find no disclosure or suggestion by Popovic of generating a training code with at least nearly ideal cyclic auto-correlation properties such that its cyclic auto-correlation function is at least nearly zero for all cyclic shifts. Independent claims 11 and 12 require generating a training code with at least nearly ideal cyclic auto-correlation properties such that its cyclic auto-correlation function is at least nearly zero for all cyclic shifts; and transmitting said training code.

Thus, Popovic does not disclose or suggest generating a training code with at least nearly ideal cyclic auto-correlation properties such that its cyclic auto-correlation function is at least nearly zero for all cyclic shifts; and transmitting said training code, as required by new independent claims 11 and 12.

Allowance of claims 11 and 12 is believed to be warranted.

Dependent Claims 2-10

Dependent claim 2 was rejected under 35 U.S.C. §102(e) as being anticipated by Popovic and claims 6-8 were rejected under 35 U.S.C. §103(a) as being unpatentable over Popovic.

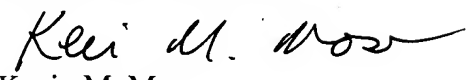
Claims 2-4 and 6-10 are dependent on claim 1 and are therefore patentably distinguished over Popovic because of their dependency from independent claim 1 for the reasons set forth above, as well as other elements these claims add in combination to their base claim. The Examiner has already indicated that claims 3 and 4 would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims.

All of the pending claims following entry of the amendments, i.e., claims 1-4 and 6-12, are in condition for allowance and such favorable action is earnestly solicited.

If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this application, the Examiner is invited to contact the undersigned at the telephone number indicated below.

The Examiner's attention to this matter is appreciated.

Respectfully submitted,



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